



Applicant or Patentee: Edward W. McGovern Attorney's  
Serial or Patent No.: \_\_\_\_\_ Docket No.: 940497  
Filed or Issued: \_\_\_\_\_  
For: "Pavement Rejuvenator and Dressing Conditioner Emulsions and Jellies"

**VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY STATUS  
(37 CFR 1.9(f) & 1.27(c))--SMALL BUSINESS CONCERN**

I hereby declare that I am

\_\_\_\_ the owner of the small business concern identified below:  
☒ an official of the small business concern empowered to act on behalf  
of the concern identified below:

NAME OF SMALL BUSINESS CONCERN K.A.E. Paving Consultants, Inc.  
ADDRESS OF SMALL BUSINESS CONCERN 141 Parkwood Drive  
Cranberry Township, PA 16066

I hereby declare that the above identified small business concern qualifies as a small business concern as defined in 37 CFR 121.12, and reproduced in 37 CFR 1.9(d), for purposes of paying reduced fees to the United States Patent and Trademark Office, in that the number of employees of the concern, including those of its affiliates, does not exceed 500 persons. For purposes of this statement, (1) the number of employees of the business concern is the average over the previous fiscal year of the concern of the persons employed on a full-time, part-time or temporary basis during each of the pay periods of the fiscal year, and (2) concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both.

I hereby declare that rights under contract or law have been conveyed to and remain with the small business concern identified above with regard to the invention, entitled "Pavement Rejuvenator and Dressing Conditioner Emulsions and Jellies" by inventor(s) Edward W. McGovern

described in

☒ the specification filed herewith.  
\_\_\_\_ application serial no. \_\_\_\_\_, filed \_\_\_\_\_.  
\_\_\_\_ patent no. \_\_\_\_\_, issued \_\_\_\_\_.

If the rights held by the above identified small business concern are not exclusive, each individual, concern or organization having rights in the invention is listed below\* and no rights to the invention are held by any person, other than the inventor, who would not qualify as an independent inventor under 37 CFR 1.9(c) if that person made the invention, or by any concern which would not qualify as a small business concern under 37 CFR 1.9(d), or a nonprofit organization under 37 CFR 1.9(e). \*NOTE: Separate verified statements are required from each named person, concern or organization having rights to the invention averring to their status as small entities. (37 CFR 1.27)

NAME \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
\_\_\_\_ INDIVIDUAL \_\_\_\_\_ SMALL BUSINESS CONCERN \_\_\_\_\_ NONPROFIT ORGANIZATION

NAME \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
\_\_\_\_\_INDIVIDUAL\_\_\_\_\_SMALL BUSINESS CONCERN\_\_\_\_\_NONPROFIT ORGANIZATION

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR 1.28(b))

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

NAME OF PERSON SIGNING Arthur J. McGovern  
TITLE OF PERSON IF OTHER THAN OWNER President  
ADDRESS OF PERSON SIGNING 141 Parkwood Drive, Cranberry Township, PA 16066

SIGNATURE \_\_\_\_\_

DATE 25 Apr 95

DECLARATION AND POWER OF ATTORNEY PETITION

<sup>1.00</sup>  
Edward W. McGovern, declares:

☒ I am a citizen of the United States of America and a resident of the City of Pittsburgh, County of Allegheny, Commonwealth of Pennsylvania, whose post-office address is 265 Shadowlawn Avenue, Pittsburgh, Pennsylvania 15216. PK

☒ I believe myself to be the original, first and sole inventor of the improvement entitled "Pavement Rejuvenator and Dressing Conditioner Emulsions and Jellies" which is described and claimed in the annexed specification.

☒ I have reviewed and understand the contents of the specification, including the claims.

I do not know and do not believe that the same was ever known or used in the United States before my invention thereof; or patented or described in any printed publication in any country before my invention or more than one year prior to this application; or in public use or on sale in the United States more than one year prior to this application.

Said invention has not been patented or been made the subject of an inventor's certificate in any country foreign to the United States on an application filed by me or my legal representatives or assigns more than twelve months prior to this application.

☒ I acknowledge my duty to disclose information of which I am aware which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56(a).

No application for patent or inventor's certificate thereon has been filed by me or my legal representatives or assigns in any country foreign to the United States.

I declare further that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

16 I hereby appoint David C. Bruening, Registration No. 20,742; William H. Webb, Registration No. 13,467; William H. Logsdon, Registration No. 22,132; Russell D. Orkin, Registration No. 25,363; David C. Hanson, Registration No. 23,024; Richard L. Byrne, Registration No. 28,498; Frederick B. Ziesenheim, Registration No. 19,438; Kent E. Baldauf, Registration No. 25,826; Barbara E. Johnson, Registration No. 31,198; Paul M. Reznick, Registration No. 33,059; Raymond J. Harmuth, Registration No. 33,896; John W. McIlvaine, Registration No. 34,219; Michael I. Shamos, Registration No. 30,424; Blynn L. Shideler, Registration No. 35,034; Julie W. Meder, Registration No. 36,216; and Lester N. Fortney, Registration No. 38,141, whose post-office address is 700 Koppers Building, 436 Seventh Avenue, Pittsburgh, Pennsylvania 15219-1818, Telephone No. 412-471-8815, my attorneys with full power of substitution and revocation, to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith, to amend the specification, to appeal in case of rejection, as they may deem advisable, to receive the patent when granted and generally to do all matters and things needful in the premises, as fully and to all intents and purposes as I could do. All correspondence and telephone calls should be addressed to David C. Bruening.

I hereby subscribe my name to the foregoing specification and claims, declaration and power of attorney this 6 day of April, 1995.

Inventor Edward W. McGovern  
Edward W. McGovern

PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Group Art Unit 1108 :  
In re application of :  
EDWARD W. MCGOVERN : PAVEMENT REJUVENATOR AND  
Serial No. 08/429,579 : DRESSING CONDITIONER EMULSIONS  
AND JELLIES  
Filed April 27, 1995 :  
Examiner - D. Brunsman :

Pittsburgh, Pennsylvania  
March 14, 1996

DECLARATION

Hon. Commissioner of Patents and Trademarks  
Washington, D.C. 20231

Sir:

I, Edward W. McGovern, declare as follows:

1. I hold a Bachelor of Science Degree in Chemical Engineering from the University of Pittsburgh; my industrial experience in the paving industry includes research and development work completed in Australia to enable highway paving with high-temperature coke oven tar; and at the South African Iron and Steel Corporation I pioneered the development of road grade tar from coke oven tar.

2. Emulsified asphalt-type bitumens are commonplace and widely available. Asphalt bitumens such as are discussed exclusively in U.S. Patent No. 5,268,029 to Demangeon et al. are aliphatic straight chain hydrocarbons which are easily emulsified or dispersed in aqueous media using a variety of dispersing agents.

3. Coal tar pitch-type bitumens have a fundamentally different molecular character to asphalt-type bitumens. Coal tar pitch-type bitumens are aromatic hydrocarbons which uniformly have a higher density than do asphalt-type bitumen hydrocarbons. Prior art processes which address potential emulsification of asphalt-type bitumens are thus inapplicable to potential emulsification of coal tar pitch-type bitumens.

4. Proof of the solubility distinctions between coal tar and asphaltic (petroleum) bitumens was made of record in the prosecution history of Reexamination Certificate B1 4,661,378, in my Declaration dated September 23, 1993, a copy of which is attached. The immiscibility of coal tar and petroleum products and the other differing properties identified in that Declaration correlate directly with their fundamentally different solubilities. It is therefore my expert opinion, based upon this evidence, that any teaching directed to the emulsification of asphalt cannot be considered to extend, prima facie, to the practicalities or even to the feasibility of emulsifying coal tar pitch-type bitumens. The proportions of constituents and emulsifiers, set forth and claimed in the above-identified patent application, are not taught by the prior art because the prior art does not address the emulsification of coal tar derivatives at all.

5. The present claims are directed only to coal tar pitch-type bitumens, namely, "a coal tar derivative containing a mixture of di-, tri- and tetracyclic aromatic compounds and their alkyl homologs containing lower alkyl groups together with a significant amount of phenolic and hydroxy derivatives."

6. I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements are made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

March 18, 1996  
Date

Edward W. McGovern  
Edward W. McGovern

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent No. 4,661,378	:	PAVEMENT DRESSING
Granted April 28, 1987	:	CONDITIONER FORMED OF TAR,
Reexamination Control	:	AN AROMATIC SOLVENT AND A
No. 90/002,855	:	BITUMINOUS PAVEMENT
	:	REJUVENATOR
Filed October 8, 1992	:	
Examiner - D. Dudash	:	

SUPPLEMENTAL DECLARATION

EDWARD W. MCGOVERN declares as follows:

1. I hold a Bachelor of Science Degree in Chemical Engineering from the University of Pittsburgh; my industrial experience in the paving industry includes research and development work completed in Australia to enable highway paving with high-temperature coke oven tar; and at the South African Iron and Steel Corporation I pioneered the development of road grade tar from coke oven tar.

2. I am the sole inventor of the subject matter disclosed and claimed in United States Patent No. 4,661,378, entitled "Pavement Dressing Conditioner Formed of Tar, an Aromatic Solvent and a Bituminous Pavement Rejuvenator," ("the '378 patent"), which is a pavement treating composition.

3. As I stated in my Declaration dated March 12, 1993, I determined through trial and error testing that the environmentally acceptable solvent used to substitute for the coal tar heavy solvent disclosed in United States Patent No. 3,261,269 ("the '269 patent") had to have the following characteristics: API Gravity at 60° F. of from 11-30,

**COPY**



Specific Gravity 60/60° F. of from 0.876-0.993, IBP between 310 and 450, DP of between 350 and 550 and a Flash pt. °F.TCC of from 110-250. Although other solvents were tested--and the results of those tests appear below--no solvent other than those meeting the above definition was found to be acceptable.

4. When I commenced my trial and error tests the conventional knowledge of those skilled in the art was that coal tar derivatives and petroleum derivatives (including asphalt per se as well as petroleum solvents) are immiscible and therefore incompatible. This conventional wisdom is evidenced in the following cited publications.

a) In Hoiberg, Arnold, ed., Bituminous Materials: Asphalts, Tars and Pitches, Vol. 1, Interscience Publishers, John Wiley & Sons, New York, 1964, p. 28, it is explained in the first full paragraph that coal tars and coal tar pitches are fractionated by various petroleum solvents. A prerequisite of a solvent used for fractioning, obviously, is the inability of the solvent to dissolve all fractions. In other words, the solvents disclosed in the first full paragraph are unable to dissolve coal tars and coal tar pitches: pyridine; benzene; and n-hexane. Pages 26-30 of the Hoiberg book are attached hereto and; particular attention is directed to the last paragraph on page 30, which compares coal tar fractions to those of the asphaltenes.

b) Pyridine, benzene and n-hexane are not the only solvents unable to dissolve coal tars, as documented in the literature. In Hoiberg, Arnold, ed., Bituminous Materials: Asphalts, Tars and Pitches, Vol. III, Interscience Publishers,

John Wiley & Sons, New York, 1964, p. 211 (copy attached), fourteen common solvents are shown in Table 5-10 and none of them dissolves more than 71% of coal tar at 92° C.

c) Additional documentation of the incompatibility of petroleum products (including asphalts) with coal tars appears in sections VI-VII of the above-cited Hoiberg text, Vol. 1, pp. 136-138. Section VI explains how various asphalts affect various coal tars and pitches when they are brought in contact with each other. Paragraph D, in particular, explains that tars and pitches are hardened when contacted with asphalts, and this exudativity is not merely the result of averaged viscosities. Section VII goes on to explain that "not all bitumens are mutually miscible: asphalts and coal-tar pitches, for example, can be safely combined in only a limited number of proportions . . ." and "Livering, syneresis, sludging, and actual precipitation of untolerated fractions results from an attempt to combine bitumens that are immiscible (or, in this particular sense, incompatible) with each other" (p. 138, first full paragraph). The conclusion to be drawn from these passages as they pertain to the '378 patent is that petroleum products and coal tars are generally immiscible, incompatible, and certainly do not admix in the sense of a conventional solute and solvent.

d) Accompanying this Supplemental Declaration is a copy of page 1053 of the 1981 Annual Book of ASTM Standards, Part 15: Road, Paving, Bituminous Materials; Travelled Surface Characteristics. This page, entitled "Xylene-Insoluble (XI) Content of Tar and Pitch" shows that a standard test method

for characterizing coal tar is the analysis of its xylene-insoluble content. This standard test method itself, therefore, corroborates the fact that there are solvents--in this case, xylene--in which coal tar is insoluble to a significant degree.

e) Ironically, the conventional wisdom that petroleum derivatives (including asphalt per se, as well as petroleum solvents) and coal tar derivatives are incompatible persists to this day despite the commercial success of the product according to the '378 patent (see paragraph 8 below). In "Troubleshooting Sealcoating," Pavement Maintenance, Volume 8, No. 4, pp. 213-214 (May 1993), copy attached, a "representative of one of the manufacturers said an asphalt emulsion/coal tar emulsion mixture would not be effective" because of the incompatible molecular structures between the asphalt and the coal tar (Page 214, Column 3, lines 20-25).

5. Contrary to the conventional knowledge, I proceeded with trial and error tests to identify a solvent which would be environmentally acceptable and which would serve as an acceptable carrier for the present tar/bituminous pavement rejuvenator carrier. I therefore conducted each of the following tests of environmentally acceptable solvents. It should be noted that the reason the solvent range is stated as 25-35 percent was that coal tar does not have a commercially uniform tar solids content and therefore an effective amount of solvent could not be precisely predicted.

For each of the following tests solvent addition was attempted throughout the 25-35 percent addition range, within which some percentage should have given acceptable dissolution if the solvent were acceptable at all.

a) Topped coke oven tar (75-100 seconds float test at 50° C., 46.0 parts by weight) at a temperature of 200° F. was added to a mixing tank equipped with recirculation. Bituminous pavement rejuvenator at a temperature of 150° F., 24 percent by weight was added to the tank. The mixture was recirculated and then 25-35 percent by weight of petroleum solvent naphtha (initial boiling point 149° C.; distillation end point 204° C.; flash point 100° F. specific gravity less than 1) at ambient temperature was added, with a subsequent period of standing after mixing. Greater than 10 percent of the combined tar/bituminous pavement rejuvenator was identified as a precipitate on the sides and bottom of the mixing tank. In order to be useful the dissolved combined tar/bituminous pavement rejuvenator must contain less than 4 percent solids, to accommodate the spraying equipment which is used to apply the combined composition, and therefore the selection of petroleum solvent naphtha proved to be an unacceptable solvent.

b) The test according to paragraph 5a) was repeated except that the 25-35 percent by weight of petroleum solvent naphtha was substituted with 25-35 percent kerosene. Greater than 10 percent by weight solids appeared as a precipitate on the sides and bottom of the mixing tank.

c) The test summarized in paragraph 5a) was repeated except that 25-35 percent gasoline was substituted for the 25-35 percent petroleum solvent naphtha. Greater than 10 percent solids remained after mixing.

d) The test summarized in paragraph 5a) was repeated except that 25-35 percent commercially available "odorless" solvent was substituted for the 25-35 percent solvent naphtha. Greater than 10 percent solids remained after mixing.

e) The test summarized in paragraph 5a) was repeated except that 25-35 percent naphthenic mineral spirits was substituted for the 25-35 percent solvent naphtha. Greater than 10 percent solids remained after mixing.

f) The test summarized in paragraph 5a) was repeated except that 25-35 percent commercially available "quick drying" solvent was substituted for the 25-35 percent solvent naphtha. Greater than 10 percent solids remained after mixing.

g) Topped coke oven tar (75-100 seconds float test at 50° C., 46.0 parts by weight) at a temperature of 200°-220° F. was added to a mixing tank equipped with recirculation. Bituminous pavement rejuvenator at a temperature of 150° F. 24 percent by weight was added to the tank. The mixture was recirculated and then at ambient temperature 30 percent by weight of Hi-Sol 10 was added, with a subsequent period of standing at ambient temperature. All of the tar and bituminous

pavement rejuvenator dispersed throughout the Hi-Sol 10 and no agglomerated solids were apparent on the bottom or sides of the tank. This test was repeated and is reported as Example 1 in the '378 patent.

h) The test according to paragraph 5a) was repeated except on a smaller, "bench" scale so that photographs could be taken of the testing and the results. Appendix A hereto contains four original photographs marked 1-4. Photograph 1 shows, in order from left to right, the empty vessel (beaker), the topped coke oven tar, the petroleum solvent naphtha and the bituminous pavement rejuvenator in their respective proportions. Photograph 2 shows the topped coke oven tar and bituminous pavement rejuvenator after admixture and heating to 200° F. Photograph 3 shows solvent addition; the stirring rod at left was used for attempted thorough stirring over a period of 5 consecutive minutes of nonstop stirring. Notwithstanding solvent addition and stirring, a heavy sludge is visible on the bottom and sides of the beaker, photograph 4.

6. In the course of my trial and error testing, in order to conduct a complete analysis, I also tested the following environmentally unacceptable solvents with the following results. The applicable toxicity data is available in Sax, N. Irving, Dangerous Properties of Industrial Materials, Reinhold Publishing Corp., New York (1968).

a) Topped coke oven tar (75-100 seconds float test at 50° C., 46.0 parts by weight) at a temperature of 200° F. was added to a mixing tank equipped with recirculation.

Bituminous pavement rejuvenator at a temperature of 150° F. 24 percent by weight was added to the tank. The mixture was recirculated and then 25-35 percent by weight of xylene was added with a subsequent period of mixing and then a period of standing. After standing at ambient temperature, greater than 10 percent of the combined tar/bituminous pavement rejuvenator was identified as a precipitate on the sides and bottom of the mixing tank.

b) The test according to paragraph 6a) was repeated except that the 25-35 percent by weight of xylene was substituted with 25-35 percent benzene. Greater than 10 percent by weight solids appeared as a precipitate on the sides and bottom of the mixing tank.

c) The test summarized in paragraph 6a) was repeated except that 25-35 percent toluene was substituted for the 25-35 percent xylene. Greater than 10 percent solids remained after mixing.

7. In view of all of the above tests, which tests are representative tests selected from my records, I concluded that only solvents meeting the description API Gravity at 60° F. of from 11-30, Specific Gravity 60/60° F. of from 0.876-0.993, IBP between 310 and 450, DP of between 350 and 550 and a Flash pt. °F.TCC of from 110-250 would acceptably dissolve or disperse the tar/bituminous pavement rejuvenator tested. None of the solvents found to be unacceptable falls within this definition. Solvents found to be unacceptable fell outside this definition. Absent trial and error testing in the face of the conventional wisdom to the contrary,

therefore, the present solvent would never have been identified and could not have been obvious to one of ordinary skill in the art.

8. Finally, I have personal knowledge of the sales figures for both the product of the '269 patent and the product of the '378 patent. Between 1966 and 1985, only 2,000 gallons of the product of the '269 patent, at cost on the order of \$10 per applied gallon, were sold to Arthur J. McGovern. However, between 1985 and August 31, 1993, 470,330 gallons of the product according to the '378 patent were sold at an average price per applied gallon of \$11.75, for total revenues during that period of \$5,526,327.50. To my knowledge, between 1966 and 1985, notwithstanding the availability to those skilled in the art of the technology disclosed in the '269 patent, no one other than the inventor identified an acceptable solvent for the tar/bituminous pavement rejuvenator and further to my knowledge only the solvent described as API Gravity at 60<sup>o</sup> F. of from 11-30, Specific Gravity 60/60<sup>o</sup> F. of from 0.876-0.993, IBP between 310 and 450, DP of between 350 and 550 and a Flash pt. <sup>o</sup>F.TCC of from 110-250 has been identified as an acceptable solvent since July 23, 1985, the filing date of the '378 patent.



9. I further declare that all statements made of my own knowledge are true and all statements made on information and belief are believed to be true, and I am aware that any willful false statements and the like are punishable by fine or imprisonment, or both (18 U.S.C. 1001), and may jeopardize the validity of a patent resulting from the reexamination of United States Patent No. 4,661,378.

September 23, 1993  
Date

Edward W. McGovern  
Edward W. McGovern